

**THE PREVALENCE OF ANEMIA AND THE EFFECTIVENESS
OF NUTRITIONAL INTERVENTION STRATEGY IN
IMPROVING HAEMOGLOBIN AMONG GIRLS IN A
SELECTED SCHOOL AT MILAGANOOR**

BY

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**A DISSERTATION SUBMITTED TO THE TAMILNADU Dr. M.G.R
MEDICAL UNIVERSITY, CHENNAI, IN PARTIAL
FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE
OF
MASTER OF SCIENCE IN NURSING
APRIL – 2011**

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ABSTRACT

STATEMENT OF THE PROBLEM

A study to assess the prevalence of Anaemia and the effectiveness of nutritional intervention strategy in improving haemoglobin among girls in a selected school at Milaganoor.

The objectives of the study were

- ❖ To assess the prevalence of anemia by using haemometer & clinical examination before administering the selected nutritional intervention.
- ❖ To assess the prevalence of anemia by using haemometer & clinical examination after administering the selected nutritional intervention.
- ❖ To find out the effectiveness of nutritional intervention in improving haemoglobin among girls in a selected school.
- ❖ To associate the prevalence of anemia before administering nutritional intervention with selected demographic variables such as age, education of parents, occupation of parents, income, menstrual history and dietary pattern.

HYPOTHESES

- ❖ Post test hemoglobin level is significantly higher than the pre test level of hemoglobin.
- ❖ There is a significant association between prevalence of anemia and Selected demographic variables such as age, education of parents, Occupation of parents, income, size of family menstrual history and Dietary pattern.

METHODOLOGY:

An evaluative approach with pre-experiment design one group pre test and post test was used to evaluate effectiveness in the prevention of anemia among girls. The purposive sampling technique was used to select the sample of 60 girls. The tool consists of two sections.

The section A consists of age, education of parents, parent's occupation, and parent's income, number of family and dietary pattern.

The section B consists of check list. The Hb level was checked before intervention and preparations of rice flake balls 50 gm given daily for girls in the morning for 30 days. After intervention Hb level was checked after 30 days.

THE MAJOR FINDING OF THE STUDY:

- ❖ 24(40%) of the respondents were at the age group of 14 to 15 years,
- ❖ 34(56.6%) of them were literate, 23 (38.3%) of them were agriculture,
- ❖ 20(33.3%) of them were 2001 to 3000 family income,
- ❖ 23(38.33%) of them were in 6 to 7 members of the family,
- 47(78.33%) of them were menstrual history,
- ❖ 33(55%) of them belongs to non vegetarian.
- ❖ The respondent had mild 8(13%) of them moderate anemia 36(60%) of them had severe anemia

- ❖ 16(26.66%) before intervention. Whereas after intervention 6(26.66%) of them had mild anemia,
- ❖ 38(63.33%) had moderate anemia,
- ❖ 6(10%) severe anemia.
- ❖ The hemoglobin among the girls before provision of rice flakes was ranged minimum between (5 to 10.2) with an average mean value of 7.703 and standard deviation is 1.466.
- ❖ The hemoglobin level after provision of rice flakes was ranged between 5.8 to 11.2 with an average mean value of 8.513 and standard deviation is 1.41. This indicates the provision of rice flakes significantly effective in increasing the hemoglobin level among girl.
- ❖ There is a significant association with the demographic variable such as age, family income, size of the family, and menstrual history.
- ❖ There is no significant association with other demographic variable such as education of parents, occupation of parents and dietary pattern.

CONCLUSION:

- ❖ Conclusion was derived from the findings of the study. In the pre experimental group provision of rice flakes for the girls, it shows that level of hemoglobin was increased and the level of anemia was decreased .the level of anemia ranging from mild (13% to 26.6%), moderate anemia (60% to 63.3%) and severe anemia (26.66% to 10%) before and after intervention.

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CHAPTER – I

INTRODUCTION

“Iron lacks the glitter of gold or the sparkle of silver but out shines both in biological importance “

Pandit Jawaharlal Nehru

Food: the nutritious food is essential for a healthy life. Most of the health problems can be prevented and treated with food, which should contain all the nutrients such as carbohydrate, protein, fat, vitamins and minerals. Even though there is availability of nutritious food, many people are malnourished just because of lack of awareness about nutritious food. Good combination of food stuff, and uses of practice that conserve nutrients in food. It does not mean that expensive food is nutritionally good.

Adequate nutrition is particularly, critical for adolescents, and it is primary determinants of the growth spurt . In addition, it is an anabolic phase of life and warrants increased nutrients requirements. Nutrition survey in India has identified vitamin a deficiency, iodine deficiency disorder, iron deficiency disorder and iron deficiency anemia as the major nutrient deficiency.

In India nutritional anemia is an important public health problem affecting people from all walks of life. Adolescents are aged between 13-19 years and they account for more than one fifth of the total population of the world .In India the age groups forms 21.4% of the population .According to national family health survey 1998 ,56.6% of Adolescent girls anemia who says nine out of ten anemia suffers live on developing countries and iron deficiency is the main cause of anemia among adolescent girls.

The world health organization report 2002 titled preventing risk, promoting healthy life style; mentioned iron deficiency as the 9th -26 preventable risk of disease, disability and death in the world today . Anemia especially ,iron deficiency anemia is more prevalent state among girls .The main cause of anemia are blood loss due to excessive menstrual loss ,hook worm infestations, deficiency of iron in the diet increased demand and inadequate iron absorption .

Anemia is one of the major health problems in India and many other developing countries. Pre-adolescent as a critical period for addressing anemia in girls. Adolescent can often be reached through educational and social activities through existing setting such as school and health facilities may offer opportunities to mitigate nutrition education and actual services to reduce anemia.

Iron is necessary for many actions in the body including formation of hemoglobin, brain development and function regulation of body temperature, muscle activity. Lack of iron directly affects the immune system. The function of iron is oxygen transport and cell respiration. Schools can incorporate nutrition education into family life education, health education, AIDS preventive care vocational training activities as well as organize sessions in school for youth.

Health centers, Clinics and hospitals can offer information about improving iron status. They can also provide services for anemia screening, reducing, blood loss, increasing iron intake peer through education projects workplace. Educational session and social recreational activities can co-operate nutrition education into their programmes.

Practical information about nutritional needs can be communicated to young people through all forms of mass media [TV Radio print, Materials movies]. Among girls constitute a vulnerable group particularly in developing countries where they are traditionally married at an early age and exposed to a great risk of reproductive. The prevalence of anemia is disproportionately high in developing countries due to poverty. Inadequate diet, certain diseases pregnancy, lactation and poor access to health services. The nutritional anemia in this group attributor to high MMR. The high incidence low birth weight babies to plan effective interventions. It is important to understand then Worldwide prevalence rates for anemia are as follows in Africa, 45% for girls and 57% for boys In Oceanic, 45 % for girls

and 43 % for boys. In Latin and America and the Caribbean, 12% for girls and 22 % for boys In Asia, 19 % for girls and 17% for boys.

In our country where prolonged breast feeding, late introduction of solid food, large incidence of worm infestation, gastroenteritis and other recurrent infections are common, the incidence of anemia in general and iron deficiency anemia in particular is twice more common than the incidence reported by others from western countries, in the adolescents. The main factors contributing to this state in the older children are the poor intake and availability of iron from low iron cereals, pulses and poor intake of foods rich in haem, iron, ascorbic acid and vitamin-A.

NEED FOR STUDY :

Education is fundamental to anemia reduction projects because girls poor knowledge about its causes and adverse effects. In a survey of girls in rural India, shows that – half of the respondents diets did not know that diet is related to anemia and less than 5% mentioned excessive menstrual bleeding as a cause of anemia. Further more 29% of the School girls and 43% of out - of - School girls had no knowledge of anemia's adverse effect. The following actions to reduce anemia in girls combined to fit different settings.

At national level 73.7% prevalence of anemia

In Tamilnadu - 97.0% and Sivagangai - 81% and Madurai -95.7%

Reduced unwanted pregnancy (because pregnancy itself contribute to anemia)

- Educating and motivating young people. About nutrition needs in schools community setting, health venues and through the media.
- Increasing the iron content of food through dietary intake.

- Increasing the iron content of food through fortification.
- A mother can support study in India using a nutrition communication strategy to improve dietary intake and reduce anemia and under nutrition in early school girls were implemented over six months years post intervention evaluative showed significant increases in growth velocity, mean hemoglobin levels, anemia related knowledge and dietary pattern of the experimented compared to the control group.

It is a significant period of human growth. It occur in to unique change during this phase of life. Iron requirement increases due to issued growth pattern and loss of iron through menstrual blood loss and nutritional anemia during adolescent can affect women in the child bearing years and lead to fetal and material made morbidity and mortality.

Girl child in India the situational analysis 1998 which points out that a large number of adolescents are malnourished and the problem is more among girls 45% that boys 20%.

Prakash V. Kotechea (2005) who stated that the prevalence was 75% in the adolescent girls in veda dava Gurat. The NFHS –5 National Family Health survey conducted in (2005-06) reports that 56% of adolescent girls are in India.

Rajarathinam etal (1999) who stated that the prevalence of anemia was 44.8% among adolescent girls of rural TamilNadu. There went sever

anemia being 2.1% moderate 6.3% and mild anemia 36.5% the prevalence of anemia was 40.7% in premier girls.

According to WHO, the goal must be achieved by 2010 that the infant mortality rate 60/100 and maternal mortality ratio 124/1000 live birth.

Consumption of iron-rich foods will be improved and promoted through ICDS, MCH urban basic services UBS and development women and children in rural areas (DWCRA) programmes.

Pwratdi Thalalvar MGB nutrition meal programme (1984) was implemented in nutritious meal centre in urban at least to provide meal for VI to X std children on school working days.

Talim M (1998) denotes "Iron deficiency anemia can result due to a faulty diet having a lot of preserved, processed and junk food, that leads to deficiency of essential ingredients. The Indian diet contains 20-30 mg of iron. About 1-3 mg of iron absorbed from the daily diet, hence 10-25% of iron is required to be taken daily.

Rigaud. D (2000) emphasizes only 5-10% of iron is absorbed. Thus dietary intake should be 10-20 times higher than absorption. The coefficient of gastro intestinal absorption of iron from meat and fish is about 20% versus 3-5% of iron in vegetables. Hence, provide Iron in ferrous form, there are substances present in meat which promotes iron

absorption and substances in some vegetables their substances which limit iron absorption.

Dahaya, P. and Khosla, K; (2002, depicted ‘ A well balanced diet with enhances iron absorption, like ascorbic acid and meat is recommended. All vegetables are at increased risk of iron deficiency.

Desai V.S. (2003) evidence’s ‘ In India diets which are predominantly vegetarian and lacking in animal proteins which in tyland low in ascorbic acid contents, the bio availability of iron is poor, this coupled with poor iron absorption contributes to widespread of iron deficiency anemia.

Thomson gale, (2007) who state that iron deficiency is still a big problem today. In fact the ‘WHO’ lists iron deficiency as one of the top ten risk factors contributing to death. The prevalence of anemia was 4-5 billion people, 66-80% of the world population. Adolescent is an opportunity time for intervention to growth needs

Shamai et.al (2005) who stated that lack of dietary iron in the world 0.01 leading nutritional deficiency and the most common cause of anemia in women 15 heavy periods. Only 1 mg of iron is absorbed for every 10-20 mg of iron ingested. Iron leads to fall in academic performance with decline in memory and concentrated levels also susceptibility to infection in adolescents.

- When I went to community posting at Milaganoor, I have done assessment of school children there I found that, most of the girls faces conjunctiva skin were pallor, and they are not adequately taking iron rich diet which was confirmed by nutritional assessment. So I selected this statement.

STATEMENT OF THE PROBLEM

“A study to assess the prevalence of anemia and to find out the effectiveness of selected nutritional interventions strategy in improving hemoglobin among girls in a selected school Milaganoor.

OBJECTIVES

The objectives of the study were

- ❖ To assess the prevalence of anemia by using haemometer & clinical examination before administering the selected nutritional intervention.
- ❖ To assess the prevalence of anemia by using haemometer & clinical examination after administering the selected nutritional intervention.
- ❖ To find out the effectiveness of nutritional intervention in improving haemoglobin among girls in a selected school.
- ❖ To associate the prevalence of anemia before administering nutritional intervention with selected demographic variables such as age, education of parents, occupation of parents, income, menstrual history and dietary pattern.

HYPOTHESES

- Post test haemoglobin level is significantly higher than the pre test level of haemoglobin.
- There will be significant association between prevalence of anemia and selected demographic variables such as age, education of parents, occupation of parents, income, size of family, menstrual history and dietary pattern.

OPERATIONAL DEFINITION:

Prevalence	- It refers to the number of girls found to be anemic at the time of examination by the investigator.
Anemia	- hemoglobin less than 8 gram causing Pallor and Listlessness which is measured by using haemometer and clinical examination
Effectiveness	- It refers to desired change in terms of increase in haemoglobin brought out by nutritional Intervention.
Girls	- the girls who are in the age group of 10-15 years .
Nutritional Intervention	-Rice flakes ball prepared and distributed to sample

Ingredients

Rice flakes – 3kg, Water - 1litre ,. Jaggery-1 kg Dried dates – 500gm

Preparation

- Mix 3kg of rice flakes into 1litre of hot water and keep it for half an hour. Then add 1kg of jaggery and 500 gm dried dates and mix it well and make balls. Distribute rice flakes balls 50 gm per day.

ASSUMPTION :

1. Demographic variable will have impact on prevalence of anemia.
2. Selected Nutritional intervention will prevent anemia in terms of increasing HB level and improves the health status among girls.

PROJECTED OUTCOMES:

- To find out the prevalence among girls.

- The study will be useful for the girls to be prevented from anemia in term of rising the health status of them.
- At the end of the study the girls will be able to understand food stuffs contains more iron.

LIMITATION

1. The study period is limited to 4 weeks
2. The study is limited to girls who are having the hemoglobin level below 8 gm.
3. Limited to the selected sample size.

CONCEPTUAL FRAME WORK BASED ON VON LUDWIG BERTON LANFFY (1968) GENERAL SYSTEM MODEL

The conceptual frame work is a group of related ideas ,statements or concepts .The term conceptual model is often used interchangeably with conceptual framework and sometimes with grand theories that articulate a broad range of significant relation ship among the concepts of a discipline (Kosier Barbara 2005)

The conceptual of the study was derived from general system model given by Von Ludwig Bertanlanffy (1968).

According to this theory ,a system is a set of components or units interacting with each other in boundary that filters the type and range of exchange with in the environment. All living system of open in that there is a continual exchange of matters ,energy and informations .In open system it receives input and gives back output in the form of matter, energy and informations. tThe present study aims at developing and evaluating nutritional effectiveness of the prevalence of anemia. Bertanlaffy explained the system has four major aspects.

- I. Input
- II. Throughput
- III. Output

IV. Feedback.

➤ **INPUT**

It is the type of information's ,energy and materials that enters the system from the environment through its boundaries .In this study the level of anemia is assessed through Hb estimation and clinical examination. Samples with Hb level below 8gm% are selected. Then as an (INPUT) prepared rice flakes balls weighing 50gms/day.is administered.

➤ **THROUGHPUT**

The process takes place in throughput is Hb level in blood and disappearing of clinical features.

➤ **OUTPUT**

In output is any information that leaves system and enters the environment through the system model. It denotes the post test conducted to reassess the level of anemia through Hb estimation and clinical examination and expecting the results of improved Hb level and absence of clinical features. The high score gained by the girls indicates the effectiveness of nutritional intervention.

➤ **FEEDBACK**

If there is no improvement in Hb level and presence of clinical features again this nutritional intervention is read ministered to the girls.

CHAPTER – II

REVIEW OF LITERATURE

Man struggle to maintain iron balance when a hand full dust around him in his environment contains more iron found in the body.

-John Donne.

Review of Literature

Review of literature is an important steps in the development of a research project. It involves be systemic identification, location, Scrutiny of summery of written materials that contains materials on necessary problems.

(Polit and Hungler 2000)

Literature related to prevalence of anemia

Anand , kant and kapoor(2008) conducted a study on nutritional status of school children in rural north India, among students of class sixth to twelth standard.All children attending school at the time of survey were included. Haemoglobin was estimated by sahils' haemoglobinometer. The prevalence of anemia was 27.8% in young boys,(12-14 yrs, n=79)compared to 41.3% in older boys(15-18 yrs=92).The anemia was present in 51% of the girls (n=68) compared to 38.5% n=39 in older girls. The mean hb was higher in boys compared to girls in both the age group.

Rezaei m Rahimi z etal (2008) conducted a cross sectional study to determine the prevalence of iron deficiency anemia among adolescent school girl 14-20 years from 20 different high schools. The prevalence of anemia ($Hb < 12 \text{ mg/dl}$) among adolescent school girl was 21.4%. Iron deficiency using the ferritin level $< 12 \text{ micro gm /l}$ was found in 23.7% of studied girls. There were 47 girls (12.2%) with iron deficiency anemia ($Hb < 12 \text{ g/dl}$ and ferritin, < 20 significant differences between the presence of anemia and the level of urban slum setting. A total of 100 apparently healthy girls between the ages of 11 and 18 years were recruited. Their socioeconomic, dietary and anthropometric information was collected, and blood hemoglobin (Hb) was estimated. The prevalence of anaemia ($Hb < 12 \text{ g\%}$) was 29%. Most had mild anaemia; severe anaemia was not seen. Two-thirds of those with anaemia had low serum ferritin ($< 12 \text{ }\mu\text{g/L}$). Significant associations were observed between anaemia and low socioeconomic status, religion and reporting infrequent/non-consumption of meat (heme iron). Only meat consumption was related to hemoglobin by multiple regression analysis

Basu etal (2005) conducted the study to assess the prevalence of anemia and determine serum ferritin status among 1120 apparently healthy adolescents (12 to 18 years). The estimation of hemoglobin was done by cyanmet hemoglobin method. Serum ferritin was estimated by ELISA method in 183 students. The overall prevalence of anemia calculated as who was significantly Higher among girls (23.9 %) as compared as boys (odd

ratio -3.75 , 95% CI -2.59 - 5.43 , $p < 0.01$). The anemia was observed more in rural (25.4%) as compared to urban (14.2%) adolescents. Iron stores estimated by ferritin in 183 subjects were in 81.7% and 41.6% of the adolescents girls and boys respectively.

R. Gwaarika, et al (2005) who reported that the overall prevalence of anemia among the adolescent girls of weaker economic groups was 96.5% among girls of middle in higher middle income group was 65.18%. The prevalence of severe anemia among the weaker income group was 1:5 and among girls and middle or higher income group was 2.63%.

Jeddah et al., (2005) conducted study to find out the prevalence of anemia as well as to recognize the students (9-14) awareness of their anemic nutritional status. Anemia was more prevalent among students of at least 12 years as compared to the younger age group. Also, anemia was more marked among governmental school attendees and those born to working mothers. Only 34.1% of anemic school students were aware of their anemic status than boys.

Sabita Basu, et al., (2005) conducted cross sectional study and reported that the prevalence of anemia calculated as per 100 guideline was significantly higher among adolescent girls (23.9%) as compared to boys anemia was absorbed more in rural (25.4%) as compared to urban 14.2%) adolescent, iron stores estimated by seven fruits in 183 subjects were deficient in 81.7% & 41.6%.

Shah bk Gupta et al;(2002) This study was conducted to determine the prevalence of anemia in adolescence girls in a semi urban .A total of 209 apparently healthy girls between the ages of 11-18 years the information collected on menorrheal status and the socio demographic profile .Anemia was the hematocrit less than 36, the over all prevalence of anemia was found to be 68.8 %.The prevalence was not related to girls ,age ,body mass index, menarcheal status ,sociodemographic factors including parental education ($p=0.05$)

(Rawat CM Bajpai 2001) This study was conducted the prevalence of anemia in 504 adolescents girls (10-18years) representing 24 sub centre villages of Daurala block of Meerut was 34.5%. The prevalence of mild , moderate and severe anemin among adolescents girls was 19.0%, 14.0% and 1.4%, Majority (55.5%)were having mild anemia and only 4.0% had severe anemia .The anemin was found to be significantly associated with educational status ($p< 0.05$),birth order ($p< 0.05$), awareness regarding anemia ($p< 0.05$) and marital and obstetric status ($p< 0.05$) with no association status ($p<0.05$) with no association with age ,anthropometry and menarcheal age ($p>0.05\%$)

Krz KM et al; (2001).The study was conducted by. nutritional status of boys and girls have recently Anemia was the most important nutritional problem. Anemia prevalence was high in 4 studies (55% in

India, 42% in Nepal, 32% in Cameroon, 48% in Guatemala) and significant in 2 others (17% in Ecuador and 16% in Jamaica). These results suggest that the iron status of adolescents needs to be improved.

Chakma Tet al.,(2000) conducted study among school going children (6-14 years) of Baiga, Abuiamadia and Bharia tribes of Madhya Pradesh to assess the prevalence of anemia and intestinal parasite infestation among them. A total of 776 school going children are included in the study of whom blood sample from all and stool sample of 409 were collected. The result revealed that 30.3% of the children had severe anemia ($Hb < 7g/dl$) and 505 had intestinal parasite, Most common parasite were Hook worm (16.3%) and A Lambricoids(18.5%).

Literature related to source of iron rich diet

Deshmukh (2008) reported that the effectiveness of a weekly iron supplementation regimen among urban, slum, rural and tribal girls of Nashik, twelve and 10 adolescents girls for each cluster were identified. The decline was statistically significant ($P < 0.001$) in tribal girls (48.6% from 68.9%) and among rural girls (51.6% from 62.8%). But the decline was not statistically significant among urban slum girls. Similarly a significant rise in the mean hemoglobin level was seen among tribal and rural girls. However it did not significant among urban slum girls. The programme had performed poorly in urban slum areas, as the means

number of tablets 6.7 % 2.6 tablets in tribal girls and 7.2 % 2.2 tablets in rural girls.

Khor GL Tee Es, Prabakaran D (2004) reported the study to assess the iron status and dietary intake of 165 adolescents comprising 74 male 91 females subjects, aged 12 to 19 yrs. Multiple iron status indicators namely serum ferritin SF transferring saturation TS mean corpuscular value and hemoglobin (HB) were determined for the study. The mean age of the subjects was 15.2 % + 2 % years while the majority of the subjects was 15.2 % 2 % years while the majority of the subjects (77.6 %) had normal body mass index (BMI) values 17.6 % were underweight and 4.8 % over wight about 35 % to 40 % of the subjects showed deficient values for haematocit serum ferritin , serum iron mean corpuscular, hemoglobin (MCH) mean corpuscular volume (MCVL) and transferring Saturation (TS) and 20 % were anemic (HB < 129l) using the multiple criteria of iron status indicator. The privilege of iron depletion iron deficiency and IDA in the male and female addaserts were 5.4% vs 6.6 % 18.9 % VS 26.4 % and 5.4 % vs 26.4% the dietany iron intake of the adolescent cross satisfactory and approximately 98 % of the subjects failing to meet the Malaysian RDA and Almost all the female subjects (91 %) had dietary iron mtake below two thirds of the RDA level compared with a much smaller properties for the male adolescents (68 %)

Agarwal. ,(2002) presented in his article there are two types of dietary iron –haem iron and non haem iron .Haem iron is found in foods

and animal origin (eg) meat, fish, poultry .Its bioavailability is high with absorption being 20 to 30 % .Non haem iron is found in food of plant origin like green leafy vegetables ,whole grain cereals , tubers and pulses .Its bioavailability is lower and is determined by presence of enhancing and inhibiting factors consumed in some meals .

Talim, m. (2001) stated that , rich source of iron are mainly available in cereals (like bajra, ragi)green leafy vegetables, millets, and pulses ,rice flakes ,rice bran ,cauliflower greens , asafoetida, cloves ,cumin seed sand tamarind pulp .Fruits like pomegranate, figs ,raisins, peaches, strawberries, mulberries, and watermelon are also rich sources ,increases the haemoglobin level 80%.

Literature related to intervention

(Vyas S, Collin et al;) (2010) conducted a study to highly prevalent among women in India leaf concentrate as an alternative to Fe and folic acid supplements for treating anemia in adolescent girls. Randomized controlled trial over 3 months: one group received daily Fe and folic acid (IFA; 60 mg Fe, 500 microg folic acid); the other daily leaf concentrate (LC; 5 mg Fe, 13 microg folic acid). Hb concentration, mean cell volume, serum Fe, serum ferritin and total Fe-binding capacity were measured pre- and post-intervention. After adjustment for baseline values, LC was as effective as IFA in improving serum Fe parameters and treating

anaemia. Leaf concentrate is an effective, and more palatable, alternative to Fe and folic acid supplements for treating anaemia in adolescent girls.

Roschnik et al (2004) conducted the study the effectiveness of weekly iron supplements given 10 weeks by teachers to children in rural schools .forty nine Rural primary schools took part in the study and were children in 25 schools received a weekly tablets providing 108 mg iron while children in 24 school acted as controls. All children were demored . the hemoglobin concentration of a systemic sample of one in three children in two class of each school was estimated before and 5-17 weeks after the end of the iron supplements .A total of 1510 children aged 7-12 years were studied at both surveys. The mean hemoglobin concentration of the children in the intervention group did not change significantly ; in the untreated group it fell by 3.8 gm and the prevalence from 14.3 % to 25.6%.The difference between group was significantly larger among the younger children (7-8) years and was observed anemic and non-anemic children.

Miglioranza et al (2003) Conducted a study the fortification of food with iron is considered the best sustainable way of preventing iron deficiency when an appropriate diet is not available. The most difficult challenge is to find the ideal combination of iron fortification compound and food vehicle. We investigated the effect of cheese whey drink with 15% of frozen strawberry fortified with ferrous bisglycinate on hemoglobin values in children and adolescents.The assessed population participates in Public Educational Centers in Londrina,

Paraná (southern Brazil), which assist families living in precarious socioeconomic conditions. Although anemia prevalence did not decrease after 3 mo, there was statistically significant decreases from 41.9 % at the beginning of the study to 26.4% after 6 mo ($p < 0.001$) and to 9.6% after one year ($p < 0.001$). Statistically significant changes (mean \pm standard deviation) were observed between children and adolescents with hemoglobin values below 11 gm /dl (increases of 2.2 ± 1.03) and above 12 gm /dl (increases of 0.35 ± 1.07 ; $p < 0.001$).

Kotecha PV, Nirupam S, et al (2000). This study was conducted adolescent anemia control program was initiated as a pilot programme covering over 69000 girls in over 426 schools programme strategy was to provide once weekly fixed day (Wednesday) supervised iron folic acid (IFA) supplements to all adolescent girls in grade 8-10. After approximately 17 months of intervention, impact study was conducted in the same 30 schools in November 2001 to obtain levels of anemia and some of the paired data from the students who were part of the baseline study. Impact evaluation showed reduction in anemia prevalence by 21.5% per cent that is, from 74.7% per cent to 53.2 per cent ($p < 0.05$). Further improvement in HB was recorded among 80 per cent girls.

Deebs (2002) conducted an evaluative study of iron rich diet among adolescents girls in urban areas, Arunachal Pradesh. Pre- experimental one group pre test and post- test design was used. Selected 50 samples by

randomised sampling method ,evaluated the study by questionnaire method and detected ,70% of anaemic adolescents girls and 50% of non anaemic adolescents girls were found in pre –test. In post –test 90% of anaemia were reduced by supplementation of iron ,and iron rich diet in adolescents girls and 60 % of anaemic were reduced in non anaemic adolescents girls.

CHAPTER – III

METHODOLOGY

This chapter includes the research approach, design setting, population sample and sampling techniques description of the tool, content validity and reliability of the tool, pilot study data collection procedure and plan of data analysis.

RESEARCH APPROACH:

Quantitative research approach was used.

RESEARCH DESIGN:

The pre experimental design was used in this study.

SETTING OF THE STUDY:

The study was conducted in Government high school at Milaganoor which is situated 5km away from Matha college of Nursing, vaanpuram, Manamadurai this school comprises of classes starting from 6th -10th standard. At present school is under the control of head master Mr. Subramanian with the support of 12 teachers .there are 400 students are studying in this school among them total of 60 students who fulfilled inclusion criteria were Selected for this study. The selection of area was on the basis of feasibility in terms of cooperation among the girls and school teachers.

POPULATION:

The target population of the study the girls in the age group of (10-15) years.

SAMPLE:

The sample consists of girls in the age group of 10-15 years who are studying in Govt. High school at Milaganoor.

SAMPLE SIZE:

The samples consists of 60 girls who fulfilled the inclusion criteria was be selected

SAMPLING TECHNIQUE

Purposive sampling technique was used for this study.

SELECTION CRITERIA:**INCLUSION CRITERIA**

- Girls between age group of 10-15 years
- Only girls are included.
- The girls studying in selected school
- The girls whose Hb below 8 gm.

EXCLUSION CRITERIA

1. Boys are excluded
2. The girls with medical problems and hormonal problems are excluded

DESCRIPTION OF THE TOOL

The Tool consist of Three Part

PART - A

Demographic data of girls it consists of age, education of Parents, Occupation of parents, income, size of family members menstrual history and dietary pattern .

PART-B

Check list for clinical examination to identify the girls with signs and symptoms of < 8 gm.

PART-C

It is about sahils haemoglobino meter scale. The hemoglobin level was checked by using sahils hemoglobin meter scale. The materials of the sahils consists of sahils hemoglobinometer, salish pipette [Graduated to 20cumm], small glass rod, dropping pipette, hydrochloric acid, sahils pipette is used to aspirate blood upto 2cumm, small glass rod is use to put the sterile water drop by drop.

TESTING OF TOOL

Validity

Content validity was established by submitting the tool to 5 experts in the related field. As far as adequacy of content, all experts approved the tool constructed. A tool was found adequate and minor suggestions given by experts were incorporated.

RELIABILITY TOOL

Reliability of the check list was established by implementing the tool of girls by test retest method the reliability was found [$r = 0.8$] which indicates the reliability of the tool. Hence the tool was considered for proceeding with pilot study.

Reliability of the instruments also checked for its working condition in the lab.

PILOT STUDY

The formal permission obtained from the govt. high school Milaganoor Selected the 6 samples by purposive sampling technique and checked the hemoglobin level. The preparation of Rice flakes balls given to girls for a week again checked the hemoglobin level. Due to short duration of intervention there was no significant raise in hemoglobin level within a week.

DATA COLLECTION PROCEDURE:

Prior to the data collection, formal permission was obtained from the Head of the institution by the investigator verbal consent was obtained from the head master of Govt High school, Milaganoor. The period of data collection period was 6 weeks . The sample size which was comprised of 60 girls studying at govt high school Milaganoor. During the first week of data collection every day the researcher went to school at 9.30 am and introduced herself to the class teacher and chosen the samples a clinical examination and then they were taken to a separate room and then their hemoglobin was checked by using the sahils hemoglobin meter and clinical examination by checklist. It took about 3hours to choose 9 - 11 samples per day. Selected the girls whose hemoglobin is below 8gm was selected and they were cooperative.

From second week onwards girls were provided rice flakes ball weighing 50gms every day till 5th week at 10.30 am everyday during their break time. At 6th week the researcher checked the hemoglobin level and done the clinical examination.

Description of sahils Hemoglobin meter Scale :

Fill hamoglobinometer tube to level of lowest of graduation [0.02gm] with hydrochloric acid diluted 1:10, place ready sterile water for dilution with second hand for checking reaction time sterile finger tip and allow to dry,

and 24 gauge needle and pierce skin, blood should flow freely without any applied pressure. Wipe away first few drops of blood and then aspirate blood into pipette until the mark is reached [20cumm] avoid air bubbles. Wipe out side tip of pipette with clean absorbent paper. Blow blood out of pipette into hydrochloric acid already in haemometer tube. Blow back in to pipette several times and blow out again place the haemometer tube in the stand. Drop by drop dilute with pure water or sterile water until colours are the same. Read results exactly after 3min.

PLAN FOR DATA ANALYSIS:

The data are analyzed according to the objectives of the study by using descriptive and an inferential statistics. Descriptive statistics was find out frequency and percentage of distribution of sample and inferential statistics such as paired 't' test and chi-square was used to find out the effectiveness and intervention association of variables.

PROTECTION OF HUMAN RIGHTS:

The researcher proposal was by the dissertation committee prior to the pilot study. The permission was obtained from the head of the department of community health nursing, Matha College of Nursing Manamadurai and from the school at Milaganoor. Verbal permission was obtained from the study subject data were kept as confidential. Assurance

was given to the study subject that anonymity of each individual would be maintained.

CHAPTER – I V

DATA ANALYSIS AND INTERPRETATION

The chapter presents the quantitative results of the study attempted to evaluate the effectiveness of rice flakes in reduction of anemia among girls in high school Milaganoor .

The chapter deals with the description of the sample characteristics, analysis and interpretation of data collected from 60 girls in high school Milaganoor , pre- experimental design was used. The girls were selected by using purposive sampling technique and data were collected. To determine the effectiveness of rice flakes demonstrated the procedure and provided to the girls. The collected data were organized, coded, calculated and analyzed as per objectives of the study.

OBJECTIVES

- ❖ To assess the prevalence of anemia by using haemometer & clinical examination before administering the selected nutritional intervention.
- ❖ To assess the prevalence of anemia by using haemometer & clinical examination after administering the selected nutritional intervention.
- ❖ To find out the effectiveness of nutritional intervention in improving haemoglobin among girls in a selected school.

- ❖ To associate the prevalence of anemia before administering nutritional intervention with selected demographic variables such as age, education of parents, parents occupation, income, menstrual history and dietary pattern.

DATA ANALYSIS

SECTION I:

Table I: Frequency and percentage distribution of samples according to their selected demographic variables.

SECTION II:

Table II: Frequency and percentage distribution of samples according to level of anemia before intervention.

SECTION III:

Table III: Frequency and percentage distribution of samples according to level of anemia after intervention.

SECTION IV:

Table IV: Effectiveness of nutritional intervention in terms of increase in HB among samples.

SECTION V:

Table V: Association between the levels of the anemia among the girls and their demographic variables

SECTION- I

Table-1 Frequency and percentage distribution samples of According to their selected demographic variables .

n=60

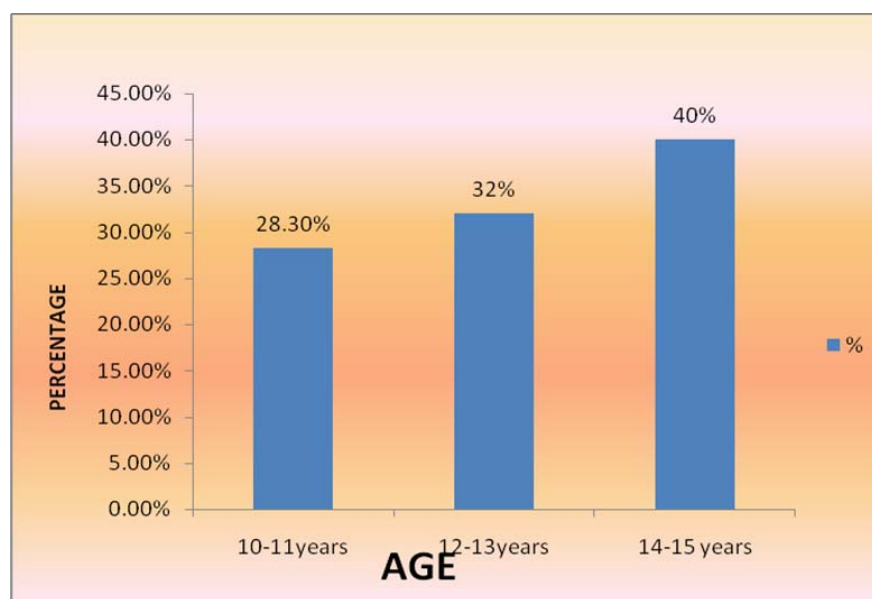
S.No	Demographic variables	F	%
1.	Age		
	a) 10-11 yrs	17	28.3
	b) 12-13 Yrs	19	31.6
	c) 14-15 Yrs	24	40
2.	Education of parents		
	a) Literate	34	56.6
	b) Illiterate	26	43.3
3.	Occupation		
	a) Agriculture	23	38.3
	b) Government employee	-	-
	c) Private employee	22	36.66
	d) Self employee	15	25

4.	Income a) Rs.2001– Rs.3000 b) Rs.3001 – Rs.4000 C) Rs.4001 – Rs.5000 d) Rs.5000 and above	20 13 17 10	33.3 21.66 28.33 16.66
5.	Size of the family a) 2-3 members b) 4-5 members c) 6-7 members	20 17 23	33.3 28.33 38.33
6.	Menstrual History a) Regular b) Irregular	47 13	78.33 21.66
7.	Dietary pattern a) Non vegetarian b) Vegetarian	33 27	55 45

The above tables reveals that distribution among girls according to age shows that 10-11 years 17(8.3%), 12-13 years ,19(31.6%)and 14-15 years 24(40%) Regarding education of parents literate 34(56.6%) illiterate 26(43.3%) Regarding the occupation of parents agriculture 23(38.3%), govt employees 0,private employee 22(36.6%) and self employee 15(25%). Regarding income rs.2001-3000 /month 20(333.3%),rs.3001-4000/month 13(21.6%), Rs 4000-5000/month 17(28.3%) rs.5000 and above 10(16.6%),.About size of the family 2- 3members of the family

20(33.3%), 4-5members of the family17 (28.3%) and 6-7members 23(38.3%). Regarding menstrual history regular 47(78.3%), and irregular13(21.6%). Regarding dietary pattern non vegetarian 33(55%) and vegetarian 27(45%)

**FIG.2 PRECENTAGE DISTRIBUTION OF SAMPLES
ACCORDING TO THEIR AGE**



**FIG.3 PERCENTAGE DISTRIBUTION OF SAMPLES
ACCORDING TO EDUCATION OF PARENTS.**

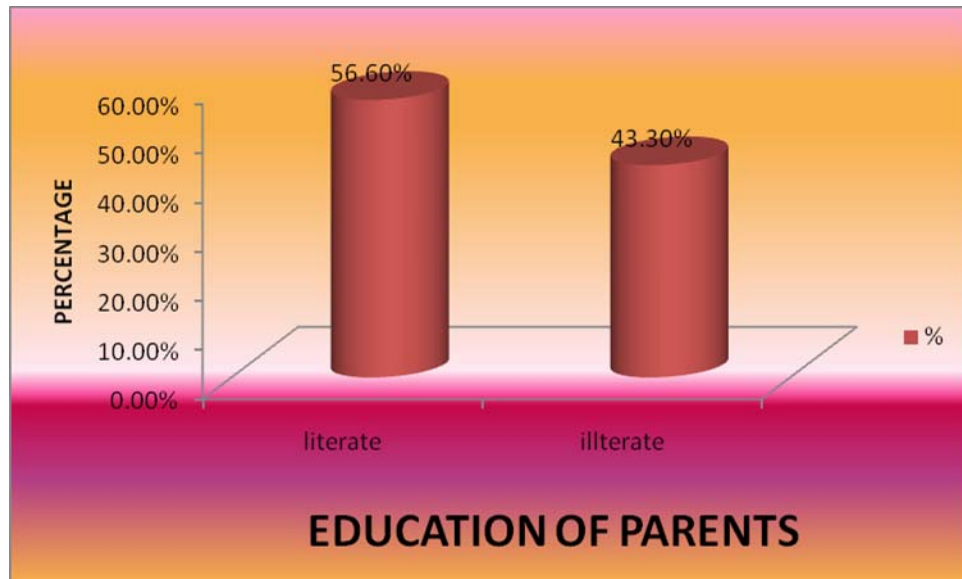
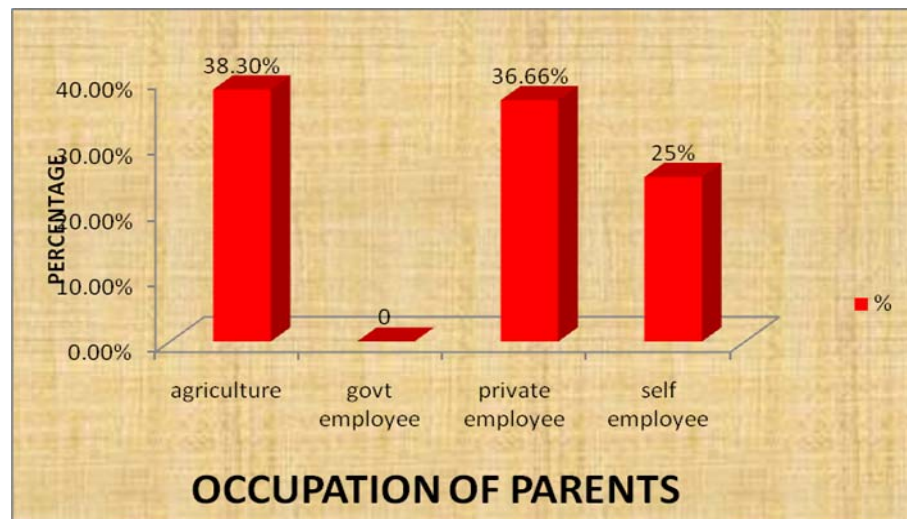
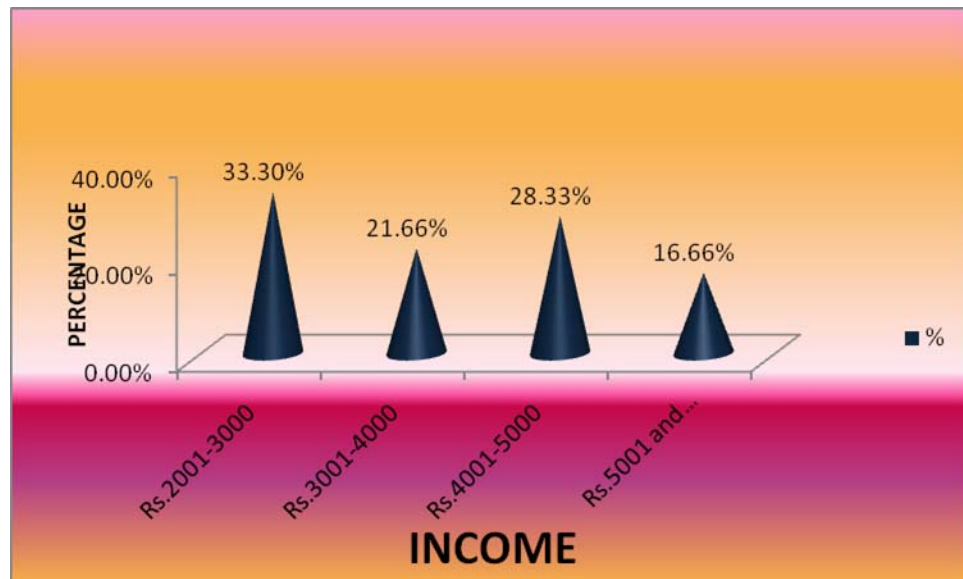


FIG.4 PERCENTAGE DISTRIBUTION OF SAMPLES ACCORDING TO OCCUPATION OF PARENTS



**FIG.5 PERCENTAGE DISTRIBUTION OF SAMPLES
ACCORDING TO THE INCOME OF PARENTS**



**FIG.6 PERCENTAGE DISTRIBUTION OF SAMPLES
ACCORDING TO ITS SIZE OF THE FAMILY**

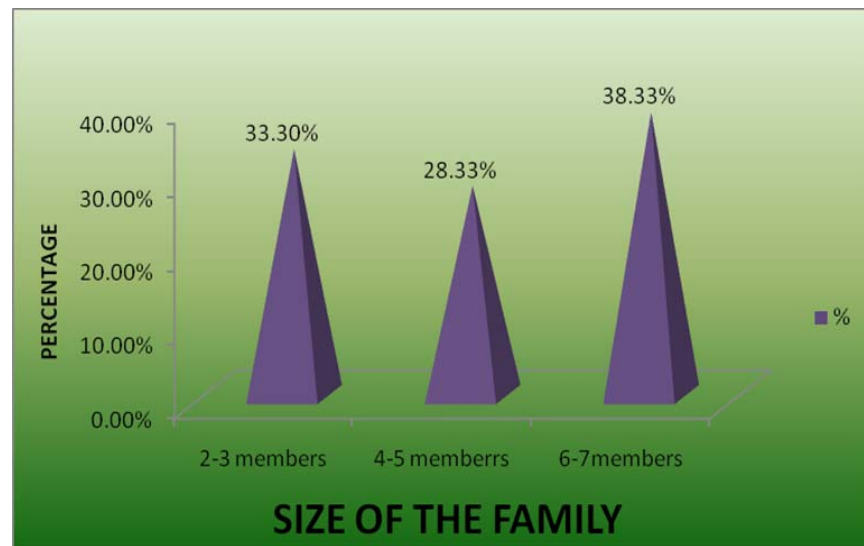
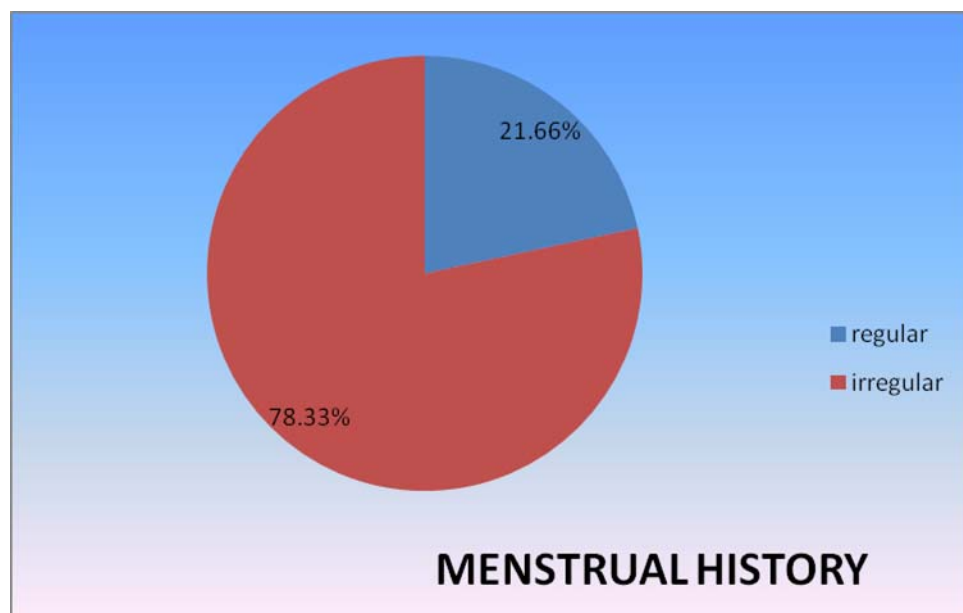
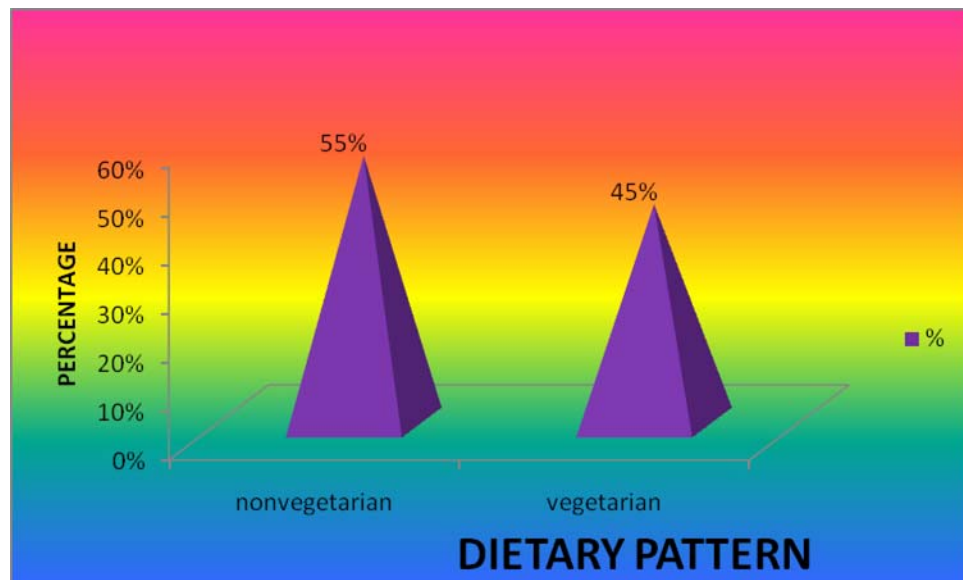


FIG.7 PERCENTAGE DISTRIBUTION OF SAMPLES ACCORDING TO THEIR MENSTRUAL HISTORY.



**FIG.8 PERCENTAGE DISTRIBUTION OF SAMPLES
ACCORDING TO ITS DIETARY PATTERN**



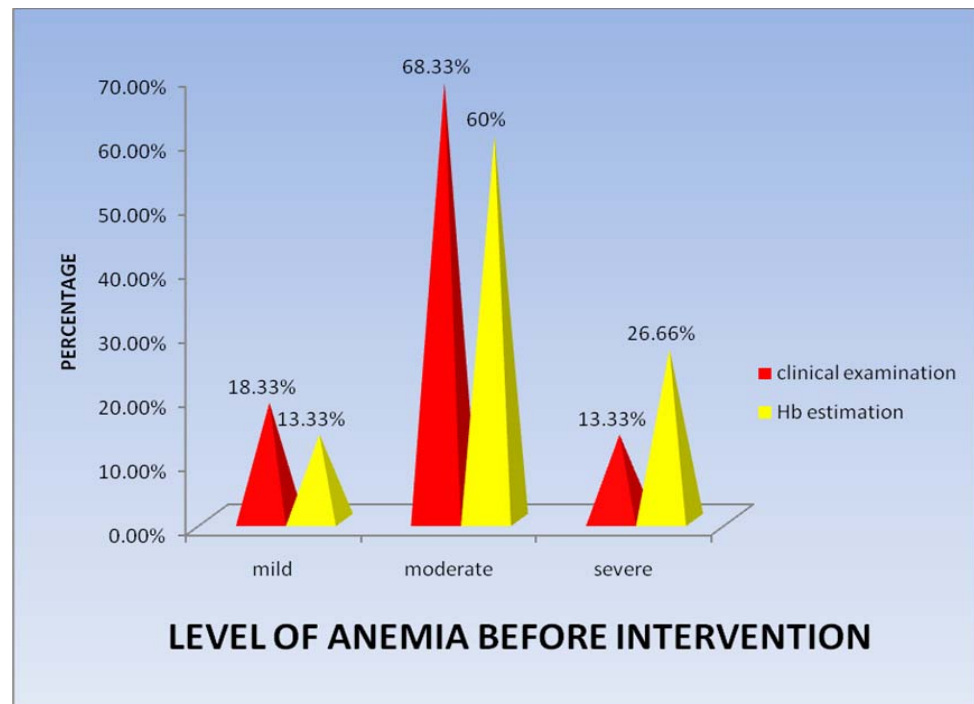
SECTION-II

Table II: Frequency and Percentage distribution of samples according to the level of anemia before intervention.

Level of anemia	Clinical		HB estimation	
	f	%	F	%
Mild	11	18.33	8	13.33
Moderate	41	68.33	36	60
Severe	8	13.33	16	26.66

The above table reveals that the Mild anemia 11(18.33%) and moderate anemia 41(68.33 %) and severe anemia 8(13.33%) and the level of anemia according to Hb estimation was mild anemia 8(13.33%) and moderate anemia 36(60%) and severe 16 (26.66%).

FIG.9 PERCENTAGE DISTRIBUTION OF SAMPLES ACCORDING TO THEIR LEVEL OF ANEMIA BEFORE INTERVENTION.



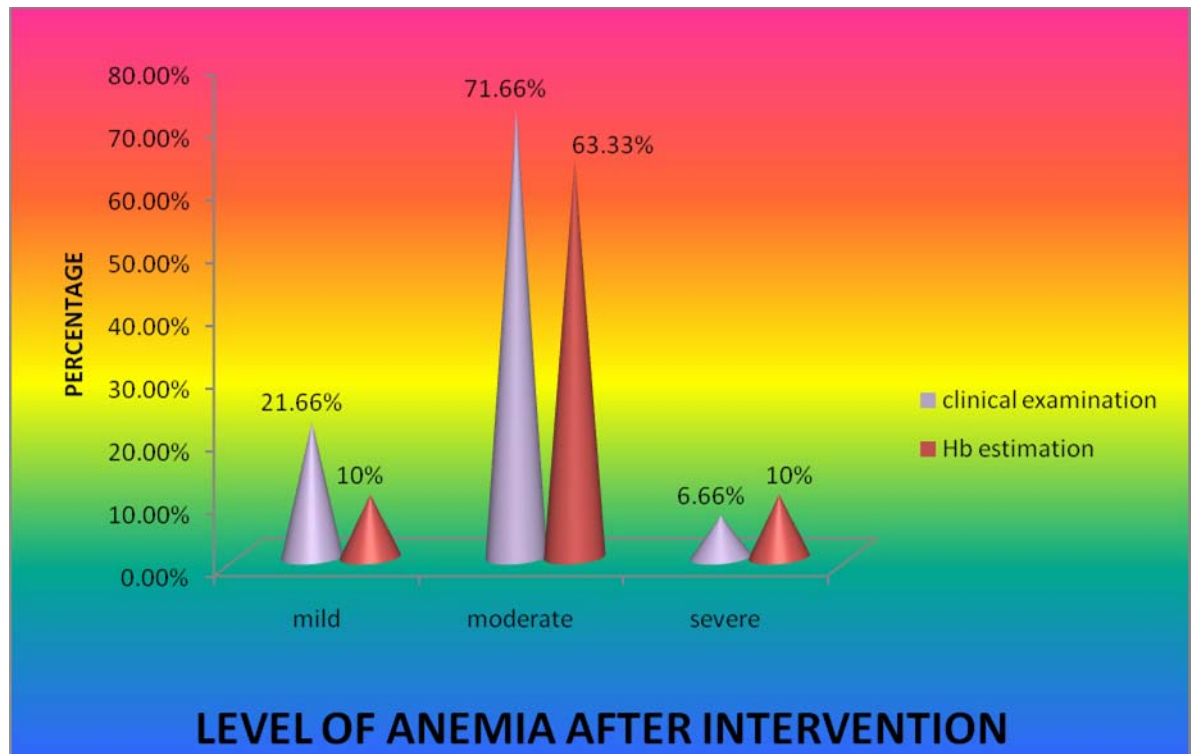
SECTION-III

Table III Frequency and percentage distribution of samples according to the level of anemia after intervention

Level of anemia	Clinical		Hb estimation	
	f	%	F	%
Mild	13	21.66	6	10
Moderate	43	71.66	38	63.33
Severe	4	6.66	6	10

The table reveals that the level of anemia by clinical examination was mild anemia 13(21.66%) and moderate anemia 43(71.66%) and severe 4 (6.66%) and the level of anemia according to Hb estimation was mild anemia 6(10%) and moderate anemia 38(63.33%) and severe 6 (10%).

FIG.10 PERCENTAGE DISTRIBUTION OF SAMPLES ACCORDING TO THEIR LEVEL OF ANEMIA AFTER INTERVENTION.



SECTION IV

TABLE : 4 EFFECTIVENESS OF NUTRITIONAL INTERVENTION IN TERMS OF INCREASE IN HEMOGLOBIN AMONG SAMPLE

Haemoglobin Level	Range		Mean	SD	Mean difference	“t” value
	Min	Max				
Before intervention	5	10.2	7.7	1.466	1.01	26.33
After intervention	5.8	11	8.5	1.417		

$P < 0.05$ Level

The above table shows that the hemoglobin level among the girls before provision of rice flakes was ranged minimum between 5 to 10.2 with an average mean value of 7.703 and standard deviation is 1.466. The hemoglobin level after provision of rice flakes was ranged between 5.8 to 11.2 with an average mean value of 8.513 and standard deviation is 1.41. This indicates provision of rice flakes significantly effective in increasing the hemoglobin level among girls .

All through the table paired ‘t’ test results shows significant difference at 5 % level of anemia .The ‘t’ value was 26.33 greater than the value at 0.05 level of significant .Hence, H₁ was retained. So research

concluded that nutritional intervention has got greater effect on anemic state of the girls.

SECTION V

ASSOCIATION BETWEEN THE LEVELS OF ANEMIA AMONG GIRLS AND THEIR DEMOGRAPHIC VARIABLES

Table-5 FREQUENCY AND PERCENTAGE DISTRIBUTION OF LEVEL OF ANEMIA AMONG GIRLS AFTER INTERVENTION n=60

Demographic variables		Level of anemia						x
		Mild		Moderate		Severe		
		F	%	f	%	f	%	
Age	10-11 yrs	4	6.66	10	16.66	3	5	5.018 ^s
	12-13Yrs	3	5	12	20	4	6.66	
	14-15Yrs	1	1.66	14	23.33	9	15	
Education of parents	Literate	4	6.66	22	36.66	8	13.33	0.659 ^{NS}
	Illiterate	4	6.66	14	23.33	8	13.33	
Occupation	Agriculture	3	5	15	25	5	8.3	1.934 ^{NS}
	Government employee	-	-	-	-	-	-	
	Private	3	5	14	25.33	5	8.33	

	employee							
	Self employee	2	3.33	7	11.66	6	10	
Income	Rs.2001- Rs.3000	2	3.3	13	21.66	5	8.33	5.363 ^S
	Rs.3001- Rs.4000	1	1.66	9	15	3	5	
	Rs.4001- Rs.5000	2	3.66	11	18.33	4	6.66	
	Rs.5000 and above	3	5	3	5	4	6.66	
Size of the family	2-3 members	2	3.33	8	13.3	10	16.66	11.84 ^S
	4-5 members	2	3.33	12	20	3	5	
	6-7 members	4	6.66	16	26.66	3	5	
Menstrual History	Regular	4	6.66	30	50	13	21.66	4.392 ^S
	Irregular	4	6.66	6	10	3	5	
Dietary pattern	Non vegetarian	4	6.66	21	35	8	13.33	0.328 ^{NS}
	Vegetarian	4	6.66	15	25	8	13.33	

The above table shows that there is a significant association with the demographic variable such as age, family income, size of the family and menstrual history. But there is no association with other demographic variables such as education of the parents, occupation of the parents and dietary pattern.

CHAPTER V

DISCUSSION

The aim of the study was to assess the prevalence and to find out the effectiveness of nutritional intervention strategy for anemia control among girls studying at government high school Milaganoor. The setting of the study was in the high school in Milaganoor. The sample size was 60.

The objectives of the study were .

- ❖ To assess the prevalence of anemia by using hemometer & clinical examination before administering selected Nutritional intervention.
- ❖ To assess the prevalence of by using hemometer & clinical examination after administering selected Nutritional intervention.

- ❖ To find out the effectiveness of nutritional Intervention in improving hemomhaemoglobin among girls in a selected controlling among adolescents .
- ❖ To associate the prevalence of anemia before intervention with selected demographic variables such as age, parent education, parents occupation, income, menstrual history and dietary pattern.

Description of demographic variables .

a)Table - 2 shows 24 {40 %} of the respondents were in the age group of 14-15 years , regarding education of the parents 34 {56.6 %} were literate .with respect to the occupation of the parents 23 {38.3} ,of their occupation was agriculture and their 23{ 33.3%} monthly income was from Rs .2001- 3000,regarding size of the family members 23 {38.33% } of them have 6-7 members in their family. 47{78.33%} had the attained menarche and 33 {55 %} of their dietary pattern was non vegetarian .

Agarwal (2001) conducted a study that the prevalence of anemia was 46.6% in pre menarcheal girls as compared to 48.4 % in post menarcheal girls in the urban slums of North East Delhi .

b)1). To assess the prevalence of anemia by using haemometer & clinical examination before administering the selected nutritional intervention.

The Table: 3 shows that the respondents had mild 8 [13%] of the moderate anemia 36 {60%} of them had anemia 16 {26.66 %} before intervention before intervention .Whereas after intervention 16 {26.66% of the mild anemia , } 38 { 63.33%} moderate anemia and severe anemia 6 {0%} .

The researcher had observed many girls look pallor and coming to school without foot wear .By this the researcher assumed and collected that these girls fell ill of abdominal pain often ,which is a symptoms of worm infestation.

So the researcher concluded that the nutritional pattern of these girls were poor as their have lack of knowledge about iron rich diet ,consuming imbalanced diet and poor hygiene .

These findings were consistent with the study conducted by Musaiger .S. etal (2002) in oman reported that prevalence of anaemia in urban school children was 25 % and 35 %respectively .The anaemic children were mild and moderate groups and no one with severe anaemia was found in his study .Result of the present study also is similar , in that majority of the anaemic children were in mild and moderate categories and no one was in severe anaemia category.

2) To assess the prevalence of anemia by using haemometer & clinical examination after administering the selected nutritional intervention

The Table:3 reveals that the level of anaemia by clinical examination was mild anemia 13(21.66%) and moderate anemia 43(71.66%) and severe 4 (6.66%) and the level of anemia according to Hb estimation was mild anemia 6(10%) and moderate anemia 38(63.33%) and severe 6 (10%).

The researcher observed that the clinical features of anaemia such as pallor active was found disappeared among the subjects who had taken rice flakes ,after the intervention

Along with that the Hb of these subjects were found level increased ranging from 0.5 to 0.8 gm %

3) To find out the effectiveness of nutritional intervention in improving haemoglobin among girls in a selected school.

The mean level of hemoglobin before and after administration of rice flakes among girls. The hemoglobin level among the before administration of rice flakes was ranged between 5 to 5.8 with an average value of 7.7 and SD is 1.466 . The hemoglobin level after administration of rice flakes was ranged minimum between 5 to 11 with an average of 8.5 and SD IS 1.417 .The difference between before and after intervention is 1.01 .This indicates the administration of rice flakes significantly effective in creasing the hemoglobin level among girls.

The table paired 't' test levels significant of anemia at 5% level .The calculated 't' value was { 26.66} Greater than the value at 0.05 level of significant .

Therefore the researcher concluded that the administration of rice flakes is effective in increasing Hb level and treating the clinical features of anaemia among the subjects.

4) To associate the prevalence of anemia before administering intervention with selected demographic variables such as age , parents education, parents occupation income menstrual history and dietary pattern .

There was a significant association with the demographic variables such as age, class, family income , size of the family and menstrual history.

Most the respondents were at the age group of 14-15 yrs and have association with the demographic variables and supported by the study.(DGHS)Directorate general of health services(2003-2004) has reported prevalence of anemia among 12-14 years of girls in southern state of india in tamilnadu among 12-14 years of girls 46.3% girls were normal,38.3% had mild anemia,15.2% had moderate anemia and 0.2% of girls had severe anemia.

According to sen, A kanai (2006) reported that during school age and early adolescent, nutritional requirement are very high and reserve are being laid for the subsequent rapid and growth and development a study on

children aged 8 to 16 years noted that the performance of anemic children was very poor compared to non anemic children.

Regarding income most of the subjects were from low income family ranging from 2001-3000. The socio economic condition of these subjects were a great obstacle to buy and consume the diets rich in diet .

Regarding the menstrual history 47 (78.33%) of the subjects were regular flow. But the numbers of days different from an individual ranging from 3 to 9 days. So where there is a flow for more than 5 days regularly with poor intake of iron may cause anaemia.

Regarding size of the family 23 (38.33) of the subjects have 6-7 members in their family .This causes unequal distribution of foods that leads to intake of imbalanced diets by these subjects leading to anemia.

CHAPTER VI

SUMMARY, CONCLUSIONS, AND IMPLICATIONS AND RECOMMENDATIONS

The research design was pre experimental design was used .With the sample size of 60 ,and the sampling technique is purpose sampling

SUMMARY OF THE STUDY

The purpose of the study was to evaluate the effectiveness of rice flakes in the management of anemia. The pre-experimental one group pre test post test design was chosen for this study .

The conceptual framework for the study was based on Von Ludwig Berton Lanffy (1968) general system theory .The instrument used in the study consisted of three sections,

Sections -A demographic variables ,

Section - B sahils hemo globinometer scale to find out the hemoglobin level Section – C Check list for clinical assessment

The data were analyzed using descriptive and inferential statistics .To test the hypothesis , 't' test and chi- square were used .The 0.05% level of significance was used to test the hypothesis.

THE MAJOR FINDING OF THE STUDY:

- ❖ 24(40%) of the respondents were at the age group of 14 to 15 years,
- ❖ 34(56.6%) of them were literate,23 (38.3%) of them were agriculture,
- ❖ 20(33.3%) of them were 2001 to 3000 family income,

- ❖ 23(38.33%) of them were in 6 to 7 members of the family, 47(78.33%) of them were menstrual history,
- ❖ 33(55%) of them belongs to non vegetarian.
- ❖ The respondent had mild 8(13%) of them moderate anemia 36(60%) of them had severe anemia
- ❖ 16(26.66%) before intervention. Whereas after intervention 6(26.66%) of them had mild anemia,
- ❖ 38(63.33%) had moderate anemia,
- ❖ 6(10%) severe anemia.
- ❖ The hemoglobin among the girls before provision of rice flakes was ranged minimum between (5 to 10.2) with an average mean value of 7.703 and standard deviation is 1.466.
- ❖ The hemoglobin level after provision of rice flakes was ranged between 5.8 to 11.2 with an average mean value of 8.513 and standard deviation is 1.41. This indicates the provision of rice flakes significantly effective in increasing the hemoglobin level among girl.
- ❖ There is a significant association with the demographic variable such as age, family income, size of the family, and menstrual history.
- ❖ There is no significant association with other demographic variable such as education of parents, occupation of parents and dietary pattern.

IMPLICATIONS

There are several important implications for nursing practice

NURSING SERVICE :

- All the nurses can be taught about the importance nutritional Intervention in management of anemia
- The school health nurses can train the teachers to identify anemia, children by the clinical sign and to act as link between the school children and health care agency.
- Periodic monitoring of iron and folic acid supplement program of the school children can be implemented.
- Special nutritional programme should be implemented for the school children about anemia and its prevention
- Taking nutrition, diet, exercise personal hygienic avoid walking bare foot must be emphasized the school children and importance must be given for screening anemia.
- Motivate the school teachers and nursing periods to participate in nutritional workshops and seminars in blocks, Dist, states and national level.
- The school health nurse joining with the school teachers should conduct special class for school children on iron source demonstration of simple cheap highly nutrition iron rich food preparation.
- Health teaching should be insisted as one of the responsibilities of school health staff.

NURSING EDUCATION

- It is important to have educational programme on the effectiveness of nutritional Intervention in management of anemia
- Nursing students can be thought about identifications of anemia and its treatment.
- Curriculum should encourage the student activities on specific screening program of school child to prevent anemia
- Nursing curriculum should emphasis training on early identification of anemia and its prevention

NURSING ADMINISTRATION.

- All the nurses can be taught about the importance nutritional Intervention in management of anemia.
- Staff development programme needed to be arranged on programme based on the effectiveness of nutritional Intervention in management of a anaemia among girls .
- Nurse administrators can disseminate the research knowledge in to the practice so that the school children will become beneficial.
- In service education is to be provided to the nursing personal at various levels to make aware of anemia etiology risk factors, management (diet, exercise, Iron and folic acid tablets.) and preventive measles.

- Update the nurses knowledge about current practices through workshop and conference. This will enable them to [provide health education holistically to children will about anemia and its conservative management.
- Distribution of Iron and Folic acid tablets should be taken every 6 months intervals
- Nurse administrator can strengthen the anemia control program through organizing health camps, health education program, etc.
- The nurse administrators coordinates her work along with the staffs, to encourage them to do selected nursing measures on effectiveness of rice flakes in management of anemia among girls.
- Nursing administrator should organize in service educational programme regarding management of anemia.
- Nurse administrator should plan and conduct short term continuing education course for all nurses working in the PHC and sub center to improve the knowledge in prevalence cause prevention and consequence of anemia.

NURSING RESEARCH:

Nursing research to be done to find out various measures in management of anemia

Research can be conducted on various populations at various settings.

Nurses can be involved in conducting research on anemia in broader aspects which involves observing cooking practice selection of foods etc through longitudinal study .

The study helps the future investigators to adopt in different methods

Findings of the study can provide base line informations for further research in this area.

RECOMMENDATIONS:

- A similar study can be conducted by using large sample to generalize the finding at national or state level.
- A health camp can be conducted among the same population after introducing a health education program.
- A similar study may be conducted as an experimental approach assessing prevalence of anemia before and after administration of iron and folic acid tablets.

- Comparative the study can be conducted among be school children in private and government schools.
- A study can be conducted to identify the factors influencing anemia among school children.

CONCLUSIONS

An anemic child will grow as anemic and she will again give birth to anemic child, which is a malicious cycle. Anemia not only affects the physical escalation and physiological functioning but also the level of intelligence.

As a community health nurse we have the responsibility of creating awareness about anemia and educating the girls to iron rich diets in order to prevent further complication. Also the Government is launching many nutritional programs including distribution of iron folic acid tablets, but the utilization rate was not significant. Hence let us encourage girls, children's and teacher to utilize this services available.

APPENDIX – I

From

Prof . M. Shabera Banu M.Sc., Ph.D.,
Principal
Matha College of Nursing
Vaanpuram, Manamadurai,
Sivagangai District,
Tamilnadu

To

Respected Madam

**Sub : Regarding Project work of M.Sc., Nursing Strident – Matha College of
Nusing , Manamaduai**

One of our final year M.Sc., Nursing Student Mrs. D. Helen Shrily., M.Sc., has to conduct a research project, which is to be partial fulfillment of university requirement. The topic of research is

A study to assess the prevalence of Anaemia and the effectiveness of nutritional intervention strategy in improving haemoglobin among girls in a selected school at Milaganoor.

Kindly permit her to do the research work in your school, ***Milaganoor*** Under your available guidance and suggestion

Thanking you

Yours sincerely

Prof . M. Shabera Banu M.Sc., Ph.D.,

Principal

APPENDIX – II

LETTER SEEKING EXPERTS OPINION FOR CONTENT VALIDITY OF TOOL

From

D. Helen Shrily., M.Sc., (N) Final years

Matha College of Nursing

Vaanpuram, Manamadurai,

Sivagangai District, Tamilnadu

To

Respected Sir / madam

Sub : Requesting opinion and suggestion of experts for establishing content validity of the tools.

I am Mrs. Helen Shirly, final year M.Sc., (Nursing) student of Matha college of Nrusing, manamadurai , In partial fulfillment of Master Degree in Nursing, I have selected the topic mentioned below for the research project to be submitted to the Tamilnadu Dr. M.G.R. Medical University , Chennai..

A study to assess the prevalence of Anaemia and the effectiveness of nutritional intervention strategy in improving haemoglobin among girls in a selected school at Milaganoor.

I wish to request you kindly validate the tools and check list and give your expert opinion for necessary modification. I will be grate full for this

Thanking you

Your sincerely

D. Helen Shrily.

Enclosed

1. Certification of Validation
2. Criteria Checklist of evaluation of tools and content
3. Tool for collection of data.

CERTIFICATION OF VALIDATION

This is to certify that the tool developed by Ms. D. Helen Shrily., M.Sc., final year M.SC(N)student of Matha college of nursing, manamadurai (affiliated to Dr.M.G.R Mmedical university) is validated and can proceed with this tool and conduct the main study for dissertations entitled , ***A study to assess the prevalence of Anaemia and the effectiveness of nutritional intervention strategy in improving haemoglobin among girls in a selected school at Milaganoor.***

Date:

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APPENDIX – III
LIST OF EXPERTS

1. DR. CHALICE RAJA M.S (OG),,

Infant Jesus Hospital,

Madurai

2. Prof. Mrs. HELEN RAJAMANICKAM , M.Sc (N)

Nursing Advisor,

Matha college of Nursing,

Manamadurai

3. Mrs.VIJAYALAKSHMI,MSc.,(N),Ph.D.,

Principal Sri.Ramachandran Naidu,

Sankaran koil,

Tirunelveli district – 641 014.

4. Prof.Mrs.CHANDRAKALA., MSc(N)

HOD of Community health nursing,

Madurai.-10

5. Prof.Mrs.FEMILA DARLING., MSc(N)

Reader of Community health nursing,
CSI college of nursing,
Neyoor.

6.Mrs. SHABERA BANU , M.Sc (N) (Ph.d)

Principal,
Matha college of Nursing,
Manamadurai

7. Mrs. KALAIKURU SELVI , M.Sc (N)(Ph.d)

Vice Principal,
Matha college of Nursing,
Manamadurai.

8. Mrs. THAMARAI SELVI, M.Sc (N)(Ph.d)

Additional Vice Principal,
Matha College of Nursing
Mnamadurai.

APPENDIX - IV

TOOLS

Section : A

Demographic variables

Age

- a) 10-11yrs
- b) 12-13Yrs
- c) 14-15Yrs

Education of parents

- a) Literate
- b) Illiterate

Occupation

- a) Agriculture
- b) Government employee
- c) Private employee
- d) Self employee

Income

- a) Rs.2001– Rs.3000
- b) Rs.3001 – Rs.4000
- c) Rs.4001 – Rs.5000
- d) Rs.5000 and above

Size of the family

- a) 2-3 members
- b) 4-5 members
- c) 6-7 members

Menstrual History

- a) Regular
- b) Irregular

Dietary pattern

- a) Non vegetarian
- b) Vegetarian

SECTION : B

SAHIL'S HAEMOGLOBINOMETER

AIM ;

To estimate the amount of Hb in the given blood / 100 ml

Procedure for hemoglobin estimation by sahil's haemoglobin

For the estimation of haemoglobin, sahil's method was selected in the present study owing to the convenience of the method to be carried out in the field. For the estimation of Hb, 0.02 ml of blood was treated with drops of hydrochloric acid and allowed the mixture to develop dark brown color. This color is due to the conversion of hemoglobin into acid heamation, after three minutes the mixture is diluted in measuring tube with distilled water and compared usually with the standard color given in apparatus.

Articles required

Here hydrochloric acid N / 10 bottle of spirit , cotton swabs, distilled water, sahil's hemoglobin meter, dropper and hand washing articles.

Procedure

The following steps were observed

1. wash hand with soap and water
2. Explain the purpose and procedure to the subject
3. pour three drops of HCL in a test tube.
4. clean the left middle finger tip of the client with spirit swab
5. prick the finger tip with lancet and press and draw out 0.02 ml of bubble is allowed in between the flow of blood which disturbs the accuracy. Press the fingertip with cotton swab or at either side.
6. Blow out the blood quickly into the HCL acid in the test tube, taking care to rinse all the blood out of the capillary tube stir with small glass rod.
7. Allow the mixture to stand for 3 min for the colour to develop
8. dilute brown mixture in measuring tube with distilled water until the colour matches with the standard colour in the glass tube of the instrument. To do this add distilled water drop by drop mixing well and comparing the colour obtained
9. compare the colour holding the instrument against light
10. when colour matches, observe the mark on graduated tube where the lower meniscus rests, on the tube will indicate the hemoglobin content of the blood
11. Record hemoglobin content in gram percentages of blood
12. The Pipette was rinsed in distilled water after use each time.

SECTION - C

CHECKLIST

This tool consist of 15 statement related to signs and symptoms of anemia which helps to assessed the level of anemia

SL. NO	CONTENTS	YES	NO
1	General appearance Dull in Activity Fatigue Apathic		
2	Hair : Normal Grey Coloured hair		
3	Face Pale Odematous		
4	Eyes Conjunctiva Pinkish		

10	Nail buds Quick Refilling present Slow in refilling		
5	Palmar spoon shaped		
11	Respiratory system: Moistened Breathing pattern Slight Dryness Shortness of breath		
6	Tongue (Colour) Dyspnoea Normal		
12	Cardiovascular system Pale or coated Palpitation Stomatitis		
13	Gastrointestinal System Ulcer Normal bowel elimination		
7	Gums Constipation Bleeding Diarrhoea		
8	Integumentary System Haematemesis Skin colour		
14	Neurological system Pinkish Headache Pallor Dizziness		
9	Wound healing Normal		
	Delayed		

15	Extremities Movement: Normal Numbness Tingling of extremities		
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APPENDIX – V SCORING KEY

QUESTION NUMBER	YES	NO
1	1	0
2	1	0
3	1	0
4	1	0
5	1	0
6	1	0
7	1	0
8	1	0
9	1	0
10	1	0
11	1	0
12	1	0
13	1	0
14	1	0
15	1	0

APPENDIX – I**LETTER REQUESTING PERMISSION TO CONDUCT STUDY**

To

The Chief Medical Officer ,
Kasturba Hospital,
Dindigul.

Respected Sir/Madam,

Sub: Letter requesting permission for conducting the study

Mrs.N.Bairavi is a post graduate nursing student of our institution. She has selected the below mentioned topic for her research project to be submitted to Dr. MGR Medical university of health science, as a partial fulfillment of Master of science in Nursing Degree.

“A Study to Assess the Effectiveness of Incidental Teaching on Selected Aspects of Newborn Care given by Primi Mothers to the Newborn and their Perceived ability to Give Newborn Care at Home on Discharge in a Selected Hospital at Dindigul ”

Regarding this project, she is in need of your esteemed help and co-operation as she is interested in conducting a study of her project, in the hospital during the month of July 2010. I request you to kindly permit her to conduct the proposed study and provide her the necessary facilities.

The student will furnish details of the study, if required. Please do the needful and oblige.

Thanking You,

Yours faithfully,

Place:

Principal

Date:

APPENDIX – II

REQUISITION LETTER FOR CONTENT VALIDITY

From

30094621
M.Sc(N), Student,
R.V.S. College of Nursing,
Sulur, Coimbatore.

To

Through the Principal,

Respected Madam,

Sub : Letter requesting opinion and suggestion of experts for establishing content validity of the tool.

I am a M.Sc (N) Student in R.V.S. College of Nursing, Sulur, Coimbatore in the specialty of Obstetrics and Gynecology Nursing. As per the requirement for the partial fulfillment of the Nursing degree under Tamil Nadu Dr. MGR Medical University. I have selected the following topic for dissertation.

“A Study to Assess the Effectiveness of Incidental Teaching on Selected Aspects of Newborn Care given by Primi Mothers to the Newborn and their Perceived ability to Give Newborn Care at Home on Discharge in a Selected Hospital at Dindigul ”

I kindly request you to go through the research tool and validate against criteria given in the sheet.

Thanking you,

Yours faithfully,

(30094621)

Enclosure :

1. Objectives of the study
2. Hypothesis
3. Description of the tool
4. Research Tool
5. Criteria rating for validation
6. Content Validation certificate.

Place:

Date :